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EXAMINER	
ABDI, AMARA	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/723,363	TUTTLE ET AL.	
	Examiner	Art Unit	
	Amara Abdi	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 October 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7,14-16,18-20,22-24,26,27,29-32,39 and 43* is/are pending in the application.

4a) Of the above claim(s) *8-13,17,21,25,28,33-38,40-42 and 44-57* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,14-16,18-20,22-24,26,27,29-32,39 and 43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *See Continuation Sheet*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :07/20/2005 12/27/2005.

DETAILED ACTION

1. Applicant's arguments, see the Applicant's remarks, filed on 10/19/2007, with respect to claims 4-7, 15, 16, 21, 23, 24, 30-31, and 43 have been fully considered and are persuasive. The restriction of claims 4-7, 15, 16, 21, 23, 24, 30-32, and 43 has been withdrawn.

Specification

2. The Abstract is objected to because of the usage of term "comprising" in the Abstract. "Comprising" is considered as form and legal phraseology often used in patent claims and should not be used in the Abstract.

3. "The first support" and "the second support" where mentioned in claim 3, but not disclosed in the specification.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claim 3 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. "The first support" and "the second support" were mentioned in claim 3, but do not have any support from the specification. There was mentioned

"support" (element 50 in Fig.1) in the specification. However, "the first support" and "the second support" are different for "support"; therefore, it is considered as a new matter.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-6, 14-15, 18-20, 22-23, 26-27, and 29-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Segawa et al. (US-PGPUB 2002/0057468).

(1) Regarding claim 1:

Segawa et al. disclose a microelectronic imager (see Fig. 2), comprising:

an imaging unit (the lower part of Fig. 4) including (a) a microelectronic die (element 1 in Fig. 2) with an image sensor (element 8 in Fig. 2) and a plurality of external contacts electrically coupled to the image sensor (as shown in Fig. 2, there is are a plurality of elements coupled to the image sensor), and (b) a first referencing element (element 12 in Fig. 2) fixed to the imaging unit (see Fig. 2); and

an optics unit (the upper part of Fig. 4) having an optic member (element 5 in Fig. 2) and a second referencing element (element 18 in Fig. 2) fixed to the optics unit, the second referencing element being seated with the first referencing element at a fixed, preset position (as shown in Fig. 2, the element 18 being seated with the element 12) in which the optic member (element 5 in Fig. 2) is situated at a desired location relative to

the image sensor (element 8 in Fig. 2), (as shown in Fig. 2, the element 5 is situated at a desired location relative to the element 8).

(2) Regarding claim 18:

Segawa et al. disclose a microelectronic imager (see Fig. 2), comprising:

an imaging unit (the lower part of Fig. 4) including (a) a microelectronic die (element 1 in Fig. 2) having an image sensor (element 8 in Fig. 2) and a plurality of external contacts electrically connected to the image sensor (as shown in Fig. 2, there are a plurality of elements coupled to the image sensor), and (b) a first referencing element (element 12 in Fig. 2) fixed to the imaging unit (see Fig. 2); and

an optics unit (the upper part of Fig. 4) including an optic member (element 5 in Fig. 2) and a second referencing element (element 18 in Fig. 2) fixed to the optics unit and seated with the first referencing element (as shown in Fig. 2, the element 18 being seated with the element 12), the first and second referencing elements (elements 12 and 18) being configured to align the optic member with the image sensor (see Fig. 2) and space the optic member apart from the image sensor by a desired distance when the first and second referencing elements are seated together (as shown in Fig. 2, it is read that the first stop element and the second stop element are spacing the optic member apart from the image sensor by a desired distance).

(3) Regarding claims 2 and 19:

Segawa et al. disclose the imager (see Fig. 2), where:

the first referencing element (element 12 in Fig. 2) has a first interface feature(element 12a in Fig. 2) at a first reference location relative to the image sensor on the die (see Fig. 2);

the second referencing element (element 18 in Fig. 2) has a second interface feature (element 15 in Fig. 2) at a second reference location relative to the optic member (see Fig. 2); and

the first interface feature is engaged with the second interface feature with the first reference location coinciding with the second reference location (as shown in Fig.2, first interface feature is seated (engaged) to the second interface feature) whereby the optic member is aligned with the image sensor and positioned at a desired distance from the image sensor (see Fig. 2).

(4) Regarding claims 3 and 20:

Segawa et al. disclose the imager (see Fig. 2), where:

the first referencing element (element 12 in Fig. 2) comprises a first support projecting from the die (element 17 in Fig. 4), the first support having a first alignment component (element 12 a In Fig. 12) at a preset lateral location from the image sensor (see Fig. 2) and a first stop component (element 8b in Fig. 2) at a fixed, preset elevation from the image sensor (see Fig. 2); and

the second referencing element (element 18 in Fig. 2) comprises a second support (element 16 in Fig. 4) fixed to the optics unit, the second support having (a) a second alignment component (element 15 in Fig. 2) juxtaposed to the first alignment component (element 12 a in Fig. 2), (the juxtaposed is read as elements 15 and 12A

placed side by side) to align the optic member with a centerline of the image sensor (see Fig. 2), and (b) a second stop component (element 19 A in Fig. 2) juxtaposed to the first stop component (element 8b in Fig. 2), (the juxtaposed is read as elements 19A and 8b spaced side by side) to space the optic member apart from the image sensor by a desired distance (see Fig. 2).

(5) Regarding claim 4:

Segawa et al. disclose the imager (see Fig. 2), where:

the imaging unit further comprises a cover (element 7 in Fig. 2) over the die (element 1 in Fig. 2);

the first referencing element (element 12 in Fig. 2) comprises a first support projecting (element 17 in Fig. 2) from the cover, the first support having a first alignment component (element 12A in Fig. 4) at a preset lateral location from the image sensor (see Fig. 2) and a first stop component (element 8b in Fig. 2) at a fixed, preset elevation from the image sensor (see Fig. 2); and

the second referencing element (element 18 in Fig. 2) comprises a second support (element 16 in Fig. 2) element projecting from the optics unit, the second support having (a) a second alignment component (element 15 in Fig. 2) juxtaposed to the first alignment component (element 12 A in Fig. 2) to align the optic member with a centerline of the image sensor (the juxtaposed is read as elements 15 and 12 A placed side by side), and (b) a second stop component (element 19 A in Fig. 2) juxtaposed to the first stop component (element 8B) to space the optic member apart from the image sensor by a desired distance (the juxtaposed is read as elements 19A and 8B spaced

side by side) to space the optic member apart from the image sensor by a desired distance (see Fig. 2).

(6) Regarding claims 5 and 22:

Segawa et al. disclose the imager (see Fig. 2), where the first referencing element (element 12 in Fig. 2) comprises a first support (element 17 in Fig. 4) on the die around the image sensor (see Fig. 4) and the second referencing element (element 18 in Fig. 2) comprises a second support (element 16 in Fig. 4) on the optics unit around the optic member (see Fig. 4), and the first support on the die is mated with the second support on the optics unit (as shown in Fug. 4, elements 16 and 17 are fitted together).

(7) Regarding claim 6:

Segawa et al. disclose the imager (see Fig. 2), where the imaging unit further comprises a cover (element 11 in Fig. 2) over the image sensor (element 8 in Fig. 2); and the first referencing element (element 12 in Fig. 2) comprises a first support (element 17 in Fig. 2) on the cover and the second referencing element (element 18 in Fig. 2) comprises a second support on the optics unit around the optic member (see Fig. 2), and the first support on the cover is mated with the second support on the optics unit (as shown in Fig.9, element 16 and 17 are fitted together).

(8) Regarding claim 14:

Segawa et al. disclose a microelectronic imager (see Fig. 2), comprising:

a microelectronic die (element 1 in Fig. 2) having an image sensor (element 8 in Fig. 2) and a plurality of contacts electrically coupled to the image sensor (as shown in Fig. 2, there is a plurality of elements coupled to the image sensor);

a first referencing element (element 12 a in Fig. 2) fixed relative to the die (as shown in Fig. 2, the element 12 is fixed relative to element 1), the first referencing element having a first alignment component (element 12a in Fig. 2) at a lateral distance from the image sensor (see Fig. 2) and a first stop component (element 8b in Fig. 2) spaced apart from the image sensor along an axis normal to the image sensor by separation distance (see Fig. 2);

an optics unit (the upper part of Fig. 4) having an optic member (element 5 in Fig. 2);

and a second referencing element (element 18 in Fig. 2) connected to the optics unit (the upper part in Fig. 4), the second referencing element having a second alignment component (element 15 in Fig. 2) engaged with the first alignment component (element 12a in Fig. 4) to align the optic member with the image sensor (see Fig. 2) and a second stop component (element 19 a in Fig. 2) engaged with the first stop component (element 8b in Fig. 2) to space the optic member apart from the image sensor by a desired distance (see Fig. 2).

(9) Regarding claim 15:

Segawa et al. disclose the imager (see Fig. 2), where:

the first referencing element (element 12 in Fig. 2) comprises a first support projecting (element 17 in Fig. 2) from one of the die or a cover over the die (see Fig. 2), and the first support includes the first alignment component (element 12 A in Fig. 4) and the first stop component (element 8b in Fig. 2); and

the second referencing element (element 18 in Fig. 2) comprises a second support (element 16 in Fig. 2) projecting from the optics unit (see Fig. 2), and the second support includes the second alignment component (element 15 in Fig. 2) and the second stop component (element 19 A in Fig. 2).

(10) Regarding claim 23:

Segawa et al. disclose the imager (see Fig. 2), where the imaging unit further comprises a cover (element 11 in Fig. 2) over the die (element 1 in Fig. 2); and the first referencing element (element 12 in Fig. 2) comprises a first support (element 9 in Fig. 2) on the cover and the second referencing element (element 18 in Fig. 2) comprises a second support (the second support is inside the element 9) on the optics unit around the optic member, and the first support on the cover is mated with the second support on the optics unit (as shown in Fig.9, the first support and the second support are fitted together).

(11) Regarding claim 26:

Segawa et al. disclose a microelectronic imager (see Fig. 2), comprising:

an imaging unit (the lower part in Fig. 4) including (a) a microelectronic die (element 1 in Fig. 2) with an image sensor (element 8 in Fig. 2) and a plurality of external contacts electrically coupled to the image sensor (as shown in Fig. 2, there is are a plurality of elements coupled to the image sensor); (b) a first stand-off section (element 12 A in Fig. 4) fixed to the imaging unit (see Fig. 4) having a first interface area (element 17 in Fig. 2), 9the first interface area is read as a first support) at a set reference position relative to the image sensor (see Fig. 2);

an optics unit (the upper part of Fig. 4) having an optic member (element 5 in Fig. 2), and a second stand-off section (element 18 in Fig. 2) fixed to the optics unit (see Fig. 2), the second stand-off section having a second interface area (element 16 in Fig. 2_, 9the second interface area is read as a second support) at a set reference position relative to the optic member (see Fig. 2), where the first interface area (element 17 in Fig. 2) being seated with the second interface area (element 16 in Fig. 2) to connect the first stand-off section with the second stand-off section in a configuration in which the optic member is at a desired location relative to the image sensor (as shown in Fig. 2, the elements 16 and 17 are fitted together).

(12) Regarding claim 27:

Segawa et al. disclose the imager (see Fig. 2), where:

the first stand-off section (element 12 in Fig. 2), (the first stand-off section is read as a first referencing element) project from the die, and the first interface area (element 17 in Fig. 2), (the first interface area is read as a first support) has a first alignment component (element 12A in Fig. 4) at a preset lateral location from the image sensor (see Fig. 2) and a first stop component (element 8b in Fig. 2) at a fixed, preset elevation from the image sensor (see Fig. 2); and

the second stand-off section (element 18 in Fig. 2) (the second stand–off section is read as a second referencing element) project from the optics unit, and the second interface area (element 16 in Fig. 2), (the second interface area is read as a second support) has (a) a second alignment component (element 15 in Fig. 2) juxtaposed to the first alignment component (element 12 A in Fig. 2) to align the optic member with a

centerline of the image sensor (the juxtaposed is read as elements 15 and 12 A placed side by side), and (b) a second stop component (element 19 A in Fig. 2) juxtaposed to the first stop component (element 8B) to space the optic member apart from the image sensor by a desired distance (the juxtaposed is read as elements 19A and 8B spaced side by side) to space the optic member apart from the image sensor by a desired distance (see Fig. 2).

(13) Regarding claim 29:

Segawa et al. disclose the imager (see Fig. 2), where the first stand-off section (element 12 in Fig. 2), (the first stand-off section is read as a first referencing element) projects from the die and extends around the image sensor (see Fig. 2) and the second stand-off section (element 18 in Fig. 2) projects from the optics unit extends around the optic member (see Fig 2), and the first interface area (element 17 in Fig. 2) is mated with the second interface area (element 16 in Fig. 2), (as shown in Fig. 2, element 16 and 17 are fitted together)..

(14) Regarding claim 30:

Segawa et al. disclose the imager (see Fig. 2), where:

the image sensor further comprises a cover (element 11 in Fig. 2) over the image sensor (element 8 in Fig. 2); and the first stand-off section (element 12 in Fig. 12) projects from the cover (see Fig. 2) and the second stand-off section (element 18 in Fig. 2) projects from the optics unit (see Fig. 2), and the first interface area (element 17 in Fig. 2) is mated with the second interface area (element 16 in Fig. 2), (as shown in Fig. 2, elements 16 and 17 are fitted together).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 7, 16, 24, 3, 39, and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Segawa et al. (US-PGPUB 2002/0057468) in view of Johnson (US 5,861,654).

(1) Regarding claims 7, 24, and 31:

Segawa et al. disclose all the subject matter as described in claims 1,18, and 26. above. Furthermore, Segawa et al. disclose the first supporting element (element 17 in Fig. 4) and the second supporting element (element 16 in Fig. 4).

Segawa et al. do not explicitly mention the first step and the second step, where the second step is mated with the first step.

Johnson, in analogous environment, teaches an image sensing assembly, where using a first step (70a in Fig. 4) and a second step (element 28 b in Fig. 4), where the first and second step are fitted together (as shown in Fig. 4, the elements 28b and 70a are fitted together).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the system of Johnson, where the first step and the second step are fitted together, in the system of Segawa et al. in order for the common reference feature that is used for positioning both the image sensing device (die) on the

carrier package and the sensor assembly (die plus carrier package) in the optical system using the device (column 2, line 34-38).

(2) Regarding claim 16:

Segawa et al. disclose all the subject matter as described in claim 14 above. Furthermore, Segawa et al. disclose the first supporting element (element 17 in Fig. 4) and the second supporting element (element 16 in Fig. 4).

Segawa et al. do not explicitly mention the first step and the second step, where the second step is mated with the first step.

Johnson, in analogous environment, teaches an image sensing assembly, where using a first step (70a in Fig. 4) and a second step (element 28 b in Fig. 4), where the first and second step are fitted together (as shown in Fig. 4, the elements 28b and 70a are fitted together).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the system of Johnson, where the first step and the second step are fitted together, in the system of Segawa et al. in order for the common reference feature that is used for positioning both the image sensing device (die) on the carrier package and the sensor assembly (die plus carrier package) in the optical system using the device (column 2, line 34-38).

(3) Regarding claim 39:

Segawa et al. disclose a microelectronic imager (see Fig. 2), comprising:

microelectronic imager (see Fig. 2), comprising:

providing an imaging unit (the lower part of Fig. 4) having (a) a microelectronic die (element 1 in Fig. 2) with an image sensor (element 8 in Fig. 2) and a plurality of external contacts electrically coupled to the image sensor (as shown in Fig. 2, there are a plurality of elements coupled to the image sensor), and (b) a first referencing element (element 12 in Fig. 2) fixed to the imaging unit and having a first interface feature (element 12a in Fig. 2) at a set reference position relative to the image sensor (see Fig. 2);

providing an optics unit (the upper part of Fig. 4) having an optic member (element 5 in Fig. 2) and a second referencing element (element 18 in Fig. 2) fixed to the optics unit, the second referencing element having a second interface feature (element 15 in Fig. 2) at a set reference position relative to the optic member (see Fig. 2); and

attaching the second referencing element to the first referencing element (see Fig. 2) by seating the second interface feature with the first interface feature in a predetermined position (as shown in Fig. 2, the element 18 being seated with the element 12) in which the optic member is at a desired location relative to the image sensor (see Fig. 2).

Segawa et al. do not explicitly mention the method of packaging an imager.

Johnson, in analogous environment, teaches an image sensing assembly, where packaging an imager (column3, line 9-10).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the system of Johnson, where packaging an imager, in the

system of Segawa et al. in order for the common reference feature that is used for positioning both the image sensing device (die) on the carrier package and the sensor assembly (die plus carrier package) in the optical system using the device (column 2, line 34-38).

(4) Regarding claim 43:

Segawa et al. disclose the first referencing element (element 12 in Fig. 2) comprises a first support (element 17 in Fig. 2), and the second referencing element 9element 18 in Fig. 2) comprises a second support (element 16 in Fig. 2).

Segawa et al. do explicitly mention the first step and the second step, where matting the first step with the second step.

Johnson, in analogous environment, teaches an image sensing assembly, where using a first step (70a in Fig. 4) and a second step (element 28 b in Fig. 4), where the first and second step are fitted together (as shown in Fig. 4, the elements 28b and 70a are fitted together).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the system of Johnson, where the first step and the second step are fitted together, in the system of Segawa et al. in order for the common reference feature that is used for positioning both the image sensing device (die) on the carrier package and the sensor assembly (die plus carrier package) in the optical system using the device (column 2, line 34-38).

Contact Information:

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amara Abdi whose telephone number is (571) 270-1670. The examiner can normally be reached on Monday through Friday 7:30 Am to 5:00 PM E.T..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wu Jingge can be reached on (571) 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Amara Abdi
01/30/2008

JINGGE WU
SUPERVISORY PATENT EXAMINER